Missouri Department of Natural Resources
Total Maximum Daily Load Information Sheet

Sugar Creek

Waterbody Segment at a Glance:

County: Randolph
Nearby Cities: Moberly, Huntsville
Length of impairment: 1.5 miles
Pollutant: pH
Sources: Huntsville, Calfee
                               Abandoned Mine Lands

TMDL Priority Ranking: Medium

State map showing location of watershed

Description of the Problem
Beneficial uses of Sugar Creek
- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life and Human Health associated with Fish Consumption

Use that is impaired
- Protection of Warm Water Aquatic Life

Standards that apply
- Missouri's Water Quality Standards (WQS), 10 CSR20-7.031 (4)(E), state that water contaminants shall not cause pH to be outside of the range of 6.5-9.0 Standard Units (SU).

Many small coal-mining operations in the Huntsville area pre-date the 1940s. Eroding coal waste areas just east of Huntsville sent large amounts of coal wastes into Sugar Creek and a tributary and spilled coal wastes onto more than five acres of farmland. When sulfide minerals in rock are exposed to water and oxygen, they oxidize and form highly acidic (low pH) iron- and sulfate-rich drainage, which is harmful to aquatic life. These minerals make up a large amount of the coal wastes around Sugar Creek. The water draining through these coal wastes is extremely acidic and 1.5 miles of Sugar Creek has been polluted by acid mine drainage (AMD). The acid problems caused by the flow of surface water are aggravated by acid water emerging from flooded underground coal mines.

In 1993, the Missouri Department of Natural Resources completed a reclamation of the coal waste areas. Unstable banks of coal waste and places where coal waste was burning have been remedied. Acidity problems in Sugar Creek are less serious now, due to the elimination of coal waste erosion. However, acid problems persist in the lower 1.5 miles of Sugar Creek primarily due to resurgence of acid water from flooded underground mines. The mine openings cannot be

closed. The hydrostatic head would continue to build resulting in a blowout at the mine opening or at some other unknown point. Filling the mine voids to prevent groundwater contamination would be cost prohibitive. A solution has yet to be found to these problems. A map of the area and graphs summarizing the existing data may be found below.

A proposal for an Agriculture Nonpoint Source (AgNPS) Special Area Land Treatment (SALT) project for the Sugar Creek and Dark Creek watersheds was approved in May 2002. This is a seven-year project to be completed by June 30, 2009. It is geared to control soil erosion and improve water quality. Also, a 319 grant will be used for to fund a Feasibility Study to determine how to deal with the AMD still running into Sugar Creek. The study will be part of a Watershed Management Plan. Partners in this study are U.S. Geological Survey and the Office of Surface Mining.

The TMDL will require the stream to meet the pH standard of 6.5 – 9.0 SU. As a margin of safety, to account for the uncertainties in a natural system, an alkalinity of 90 mg/L calcium carbonate will also be required. The implementation plan will depend on the findings of the Feasibility Study.

## Map of Sugar Creek Showing the Impaired Portion and Sampling Sites
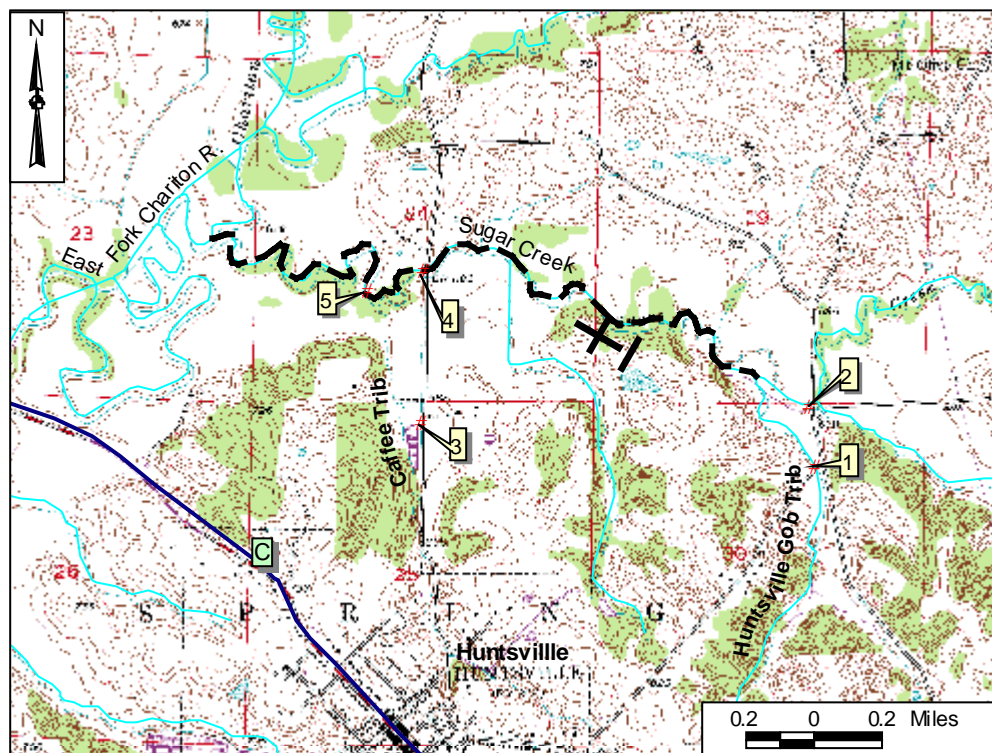
A Site Index may be found below.

Site Index

1 – Huntsville Gob tributary 0.1 mile above mouth
2 – Sugar Creek 0.2 mile above Huntsville Gob tributary
3 – Calfee tributary 0.1 mile above mouth
4 – Sugar Creek 0.1 mile above Calfee tributary
5 – Sugar Creek below Calfee tributary

pH in Sugar Creek and Tributaries
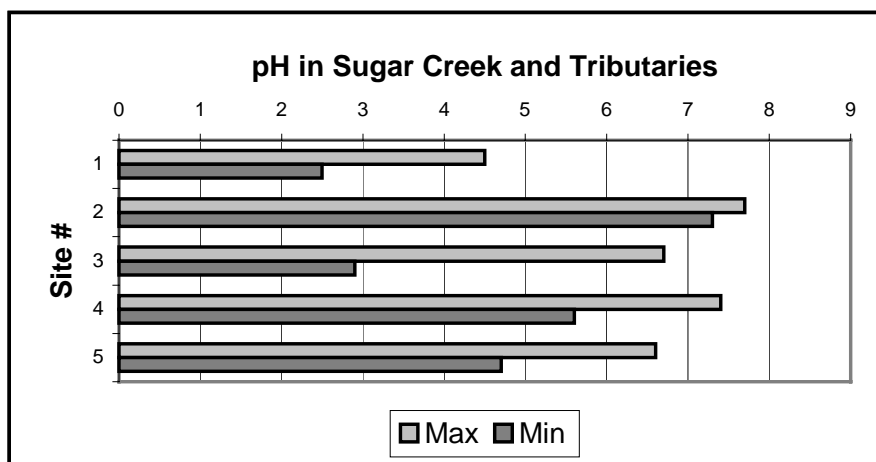
Missouri State Water Quality Standards require water to be in a pH range from 6.5-9.0 SU

Source: Missouri Department of Natural Resources

For more information call or write:
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